

Observations of the Leonid Meteors of 1904 November at the Royal Observatory, Greenwich.

(Communicated by the Astronomer Royal.)

A considerable number of Leonids were observed on the morning of November 15 (civil reckoning). The following table shows the number counted by two observers during the watch :

G.C.T.			Number of Leonids.	G.C.T.			Number of Meteors.
d	h	d h		d	h	h	
Nov. 14	22½	15 0	5	Nov. 15	3½—4		52
		h h					
15		0—I	11		4 —4½		78
		1—2	18		4½—5		65
		2—3	22		5 —5½		58
		3—3½	11		5½—6½		22

The paths of the meteors were plotted till 3½^h, but from that time the meteors were counted only, so that the numbers possibly include a few not Leonids. Fog began to obscure the sky before 4½^h, so that the time of maximum is not determined with certainty. The largest number counted in any five minutes was 22 from 4^h 5^m to 4^h 10^m.

A very fine meteor at 4^h 25^m was noted as brighter than *Jupiter* : length of path, 40° ; duration, 3 seconds. It burst, lighting up the sky, and left a trail which lasted 114 seconds.

In the early part of the watch, before 3½^h, 7 Leonids were noted of the first magnitude and four brighter, one leaving a trail for 60^s. The paths of 35 of the Leonids were 10° or longer.

The night of November 13–14 was foggy throughout. The night of November 15–16 was cloudy, with bright intervals till 2^h, when a thick fog set in. A few meteors were observed, including 10 Leonids, one of which was as bright as *Jupiter*. Through the fog a bright double flash was seen at 3^h 39½^m, but no path could be traced.

The morning of November 17 was overcast till 5^h. Between 5^h and 6½^h 11 Leonids were observed.

Note on the Shower of Leonids in 1904. By W. F. Denning.

On November 14 the weather here was pretty favourable for observation in the earlier part of the night. Between 13^h 30^m and 15^h 45^m I watched the eastern region of the sky during about 1½^h, when there were fifty-five meteors, of which thirty-three were directed from the "Sickle." I concluded that Leonids were

falling at the horary rate of twenty-five for one observer, but my outlook was somewhat limited by obstructions.

After 15^h 45^m the fog increased and further observations could not be made.

The radiant of the Leonids was at $151^{\circ} + 23^{\circ}$. The meteors seemed apparently less bright than those forming the shower of 1903 November 15. The minor radiants of the period were unusually active, and the two most prominent of these were at $43^{\circ} + 21^{\circ}$ and $143^{\circ} + 37^{\circ}$.

I could not assure myself that the shower was increasing in intensity during my intermittent watch, but from several reports sent in by reliable observers it appears that the maximum occurred at about 16^h, or soon after that hour, when the rate of apparition reached one Leonid per minute. This would make the display somewhat richer than an ordinary Perseid shower and about one-fourth as strong as the Leonid return of 1903 November 15.

There were, however, a considerable number of brilliant Leonids recorded by various observers between 17^h and 17^h 17^m, and I have received descriptions of twelve different meteors, equal to or exceeding first magnitude, which appeared during the short interval mentioned.

On November 15 at 14^h 40^m a magnificent meteor was seen at Charmouth and Torquay (where the observers estimated it as equal to the Full Moon and four times brighter than *Venus* respectively), and it appears to have been directed from a radiant in *Aries* and to have descended from eighty-three to thirty miles along a path of eighty-two miles over the north coast of France.

The fire ball lit up the sky vividly and must have presented a splendid effect over the English Channel.

Bishopston, Bristol:
1904 December 7.

A Comparison of the A. G. Catalogue (1900.0) for Vienna (Ottakring) with the Radcliffe Third Catalogue (1890.0). By F. A. Bellamy, M.A.

1. The publication of vol. ii. of the second or southern series of zone catalogues of the *Astronomische Gesellschaft* affords an opportunity of comparing this differential catalogue of stars with absolute places such as are given in the Radcliffe Third Catalogue (1890.0). In this Radcliffe Catalogue special attention was paid to stars south of the equator, with a view to establish a connection with the Cape (1880) Catalogue. The Vienna zone extending from -6° to -10° thus falls entirely